WHAT IS CLAIMED IS:

1. A method for making a thin film semi-conductor comprising the steps of:

providing a semi-conductor substrate having a surface;

anodizing the semi-conductor substrate to provide a first porous layer adjacent the surface having a first porosity;

anodizing the semi-conductor substrate to provide at least one second porous layer adjacent the first porous layer opposite the surface, each said second porous layer having a second porosity greater than said first porosity;

forming a semi-conductor film on the first porous layer; and

separating the semi-conductor film from the semi-conductor substrate along a line of relative weakness defined in or adjacent one of said second porous layers.

2. A method for making a thin film semi-conductor comprising the steps of:

providing a semi-conductor substrate having a surface;

anodizing the semi-conductor substrate at a first current density to provide a first porous layer adjacent the surface having a first porosity;

anodizing the semi-conductor substrate at a second current density higher than said first current density to provide a second porous layer adjacent the first porous layer opposite the surface, the second porous layer having a second porosity greater than the first porosity;

anodizing the semi-conductor substrate at a third current density higher than said second current density to provide a third porous layer in or adjacent the second porous layer, the third porous layer having a third porosity higher than said second porosity;

forming at least one semi-conductor film on the surface and first porous layer; and

separating the semi-conductor film from the semi-conductor substrate along a line of relative weakness defined in the third porous layer or at or adjacent an interface defined between said third porous layer and the second porous layer.

3. A method as defined in Claim 2, wherein in said anodizing steps, the semi-conductor substrate is contacted by an electrolytic solution and exposed to a flow of current at said first, second and third current density, respectively.

4. A method as defined in Claim 3, wherein the electrolytic solution comprises hydrogen fluoride and a hydrocarbon alcohol.

~~5. A method as defined in Claim 3, wherein in the anodizing steps, the electrolytic solution is the same.~~

~~6. A method as defined in Claim 3, wherein the electrolytic solution used in the anodizing steps varies.~~

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7. A method as defined in Claim 2, further comprising the step of annealing the semi-conductor substrate in a hydrogen atmosphere after the third anodizing step and before the forming step.

8. A method as defined in Claim 7, further comprising the step of oxidizing the anodized substrate after the third anodizing step and before the hydrogen annealing step.

9. A method as defined in Claim 2, wherein in the forming step the semi-conductor film is epitaxially grown.

10. A method as defined in Claim 2, wherein the semi-conductor substrate is a single crystal silicon substrate.

11. A method as defined in Claim 2, wherein the semi-conductor substrate is an impurity-doped semi-conductor substrate.

12. A method as defined in Claim 2, wherein the semi-conductor substrate is a compound semi-conductor substrate.

13. A method as defined in Claim 2, further comprising the step of attaching a support substrate to the semi-conductor film after the forming step and before the separating step.

14. A method as defined in Claim 13, wherein the support substrate is a rigid substrate.

15. A method as defined in Claim 13, wherein the support substrate is a flexible substrate.

16. A method as defined in Claim 13, wherein the support substrate is attached to the semi-conductor film by adhesive bonding.

17. A method for making a solar cell comprising the steps of:

providing a semi-conductor substrate having a surface;

forming a porous structure adjacent the surface of the substrate including a first porous layer adjacent the surface having a first porosity, a second porous layer adjacent the first porous layer opposite the surface having a second porosity greater than said first porosity and a third porous layer in or adjacent to the second porous layer having a third porosity greater than said second porosity;

forming an epitaxially grown thin film semi-conductor structure on the surface including at least one hetero junction;

forming a SiO_2 insulating layer on an exposed surface of the thin film semi-conductor structure;

patterning and etching the insulating layer to define holes;

depositing a metal film on the insulating layer to form a metal film layer;

patterning and etching the metal film layer to form electrodes disposed in the holes;

attaching elongate conductors having at least one extending end portion to the electrodes;

attaching a support substrate to the surface overlying the electrodes and conductors with a binder material; and

thereafter, separating the thin film semi-conductor structure and support substrate from the semi-conductor substrate along a line of relative weakness defined in the third porous layer or at or adjacent an interface defined between said third porous layer and the second porous layer.

18. A method for making a solar cell as defined in Claim 17, wherein the epitaxially grown thin film semi-conductor structure comprises a $p^+/p^-/n^+$ thin film semi-conductor structure.

19. A method for making a solar cell as defined in Claim 17 further comprising the step of applying a metal electrode to a surface of the separated thin film semi-conductor structure opposite the support substrate.

20. A method for making a solar cell as defined in Claim 17, wherein the support substrate comprises metal, glass, ceramic or polymer.

21. A method for making a solar cell as defined in Claim 17, wherein the support substrate is a flexible substrate.

22. A method for making a solar cell as defined in Claim 17, wherein the support substrate and binder are transparent.

23. A method for making a light emitting diode, comprising the steps of:

providing a single crystal semi-conductor substrate doped with a first type of impurity having a surface;

introducing a second type of impurity into said surface to define a surface layer doped with a second type of impurity adjacent the surface

anodizing the surface layer to define a first porous layer having a first porosity along a surface of the surface layer;

anodizing the substrate to form a second porous layer adjacent the first porosity layer and traversing the surface layer, and having a second porosity less than said first porosity;

anodizing the substrate to form a third porous layer in the second porous layer, the third porous layer having a third porosity greater than the second porosity;

providing a plurality of parallel spaced electrodes on said first porous layer;

attaching a transparent support substrate to the surface and electrodes with a transparent binder material;

separating the second porous layer from the semi-conductor substrate along a line of weakness defined in the third porous layer or at or adjacent and interface defined between said second porous layer and the third porous layer to form a separated LED substrate;

providing a like second plurality of parallel spaced electrodes on an exposed surface of said second porous layer opposite the surface layer;

attaching a second transparent support substrate to the exposed surface and electrodes with a transparent binder material to form an LED assembly; and

thereafter, subdividing the LED assembly between the spaced electrodes to define a plurality of LED devices.

24. A method as defined in Claim 23, wherein the semi-conductor substrate comprises a p-type impurity.

25. A method as defined in Claim 24, wherein the surface layer comprises an n-type impurity.

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